

## Cell phones help doctors collect data in new ways

**Physicians and nurses in Peru are using wireless phones to capture, store and transmit medical information in a research project.**

**Tyler Chin**

AMNEWS STAFF

CAN YOU HEAR ME NOW?

Loud and clear. So much so that physicians and nurses in parts of Peru have been using cell phones since September 2004 to capture and record patient files in real time as part of a larger public health surveillance pilot project designed to lower the rate of sexually transmitted diseases.

Walter H. Curioso, MD, a primary care physician in Peru who's pursuing a master's degree in public health and a certificate in biomedical and health informatics at the University of Washington in Seattle, came up with the idea to use the cell phones because "right now in Peru they are very popular and also pretty cheap," Dr. Curioso said. "If you go to Peru, even the street vendors have a cell phone."

So, he wondered if cell phones could be used as a tool to improve data quality and streamline the collection and processing of data.

"In the past, health care workers would use a paper-based system to record adverse events, and this information could take weeks or months to reach the doctors," he said. "Now, the health workers can transmit the information faster and [project] team leaders can potentially make real-time decisions."

Those doctors also are seeing more accurate data because those data are stored directly into an online database. Before, those data had to be manually entered into a computer, said Dr. Curioso, who co-designed and is leading the cell phone public health surveillance project.

That project is part of PREVEN, a large randomized trial involving the collection of STD data in 20 cities by organized groups including Dr. Curioso's employer, the Universidad Peruana Cayetano Heredia, the University of Washington, and the Imperial College of London, in collaboration with Peru's Ministry of Health.

The cell phone component of that project is taking place in three of those 20 cities — Chinchá, Huanuco and Piura. In the cell phone project, obstetricians and nurses interview female sex workers in brothels, bars and the streets. They ask the women whether they experienced adverse reactions to metronidazole, which is used to treat trichomonas and bacterial vaginosis preventively. Using a card or following a voice menu prompt on their cell phone, the health care workers go through a list of questions, pressing one and two on the phone's key pad for yes and no answers.

After they complete an interview, the health care workers dial a number. They are prompted to log in and enter a password before they can

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transmit their report to a server, which in turn is stored in an online database that can be accessed securely from anywhere in the world.

When workers report a serious adverse event — vomiting — the server will immediately trigger and transmit an e-mail and text message to the cell phones of physicians in Lima, Peru's capital. The physicians then can make immediate treatment decisions for the workers, Dr. Curioso said.

To protect patient confidentiality, sex workers are assigned a number, meaning that no patient-identifiable

information is stored or transmitted over cellular networks, he said. Only authorized users can access the encrypted online database, he added.

## Low-tech and low-cost tools

WHILE THE PERVASIVENESS OF cell phones gave Dr. Curioso the idea to use them, so did their size and cost.

"They are small, unobtrusive and cheaper than a Tablet PC or personal

digital assistant," he said. Those qualities make cell phones ideal tools for health care workers because the workers are so mobile and regularly venture into potentially dangerous areas to interview sex workers. If those health care workers pulled out Tablet PCs or PDAs during interviews, they would draw notice to themselves, risking robbery or worse, Dr. Curioso said. "If they pull out a cell phone, [ob-

servers] will think they are just making a phone call."

Although there isn't a firm date yet on when the public health surveillance pilot project will end, Dr. Curioso hopes that the results will persuade the Peruvian government to use cell phones as a public health data collection tool. He believes that the devices would work in developing — or developed — countries, enabling them to collect and process data more efficiently by piggy-backing off existing telephone networks and the Internet.

"What I realize now after doing this pilot so far is that you don't need to have the latest Palm Pilot or Tablet PC to create a sophisticated public health surveillance system," he said. ♦

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[http://www.prevenperu.org/preven/presentation\\_curioso.pdf](http://www.prevenperu.org/preven/presentation_curioso.pdf)

*The cell phone-based public health project of Walter H. Curioso, MD, in pdf*

## Business Pitch

### Psychiatrist creates "Web" of training tools

**Name:** T. Bradley Tanner, MD

**Specialty:** Psychiatry

**Location:** Chapel Hill, N.C.

**Business:** Clinical Tools Inc. Dr. Tanner's company offers online-based education, training and tools for electronic grant submissions to physicians, researchers and other health care professionals.

**Annual revenue:** \$1 million in contracts and grants from government agencies.

**Why he started the business:** "During my residency in psychiatry, I realized that the then-new Internet would have the

ability to provide unprecedented opportunities to reach patients and physicians with information," Dr. Tanner said.

"Together with another resident, I submitted a Small Business Innovation Research grant to the National Institute of Mental Health to use new media to create patient education materials. From that work, it became clear that there was an opportunity in provider education as well."

**Why he keeps practicing:** Dr. Tanner practices an average of two hours weekly because he finds it professionally and personally rewarding.

"Since the company's purpose is health care education I think it helps to be involved somewhat in the day-to-day reality of health care. Also, I like working with residents," Dr. Tanner said.

**Words of wisdom:** "Small business can be just as challenging as medicine, and nothing in medical school or residency prepares you for the day-to-day hassles of management.

"Medicine is a calling, and entrepreneurs should carefully evaluate if they will be able to achieve the same level of satisfaction and fulfillment from a career that does not involve directly working with patients ... I have learned to pace myself, and I have had to learn to delegate. Nevertheless, in the end, I am responsible for the final decisions, which can be both tiring and exhilarating." ♦

— Tyler Chin

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DR. TANNER